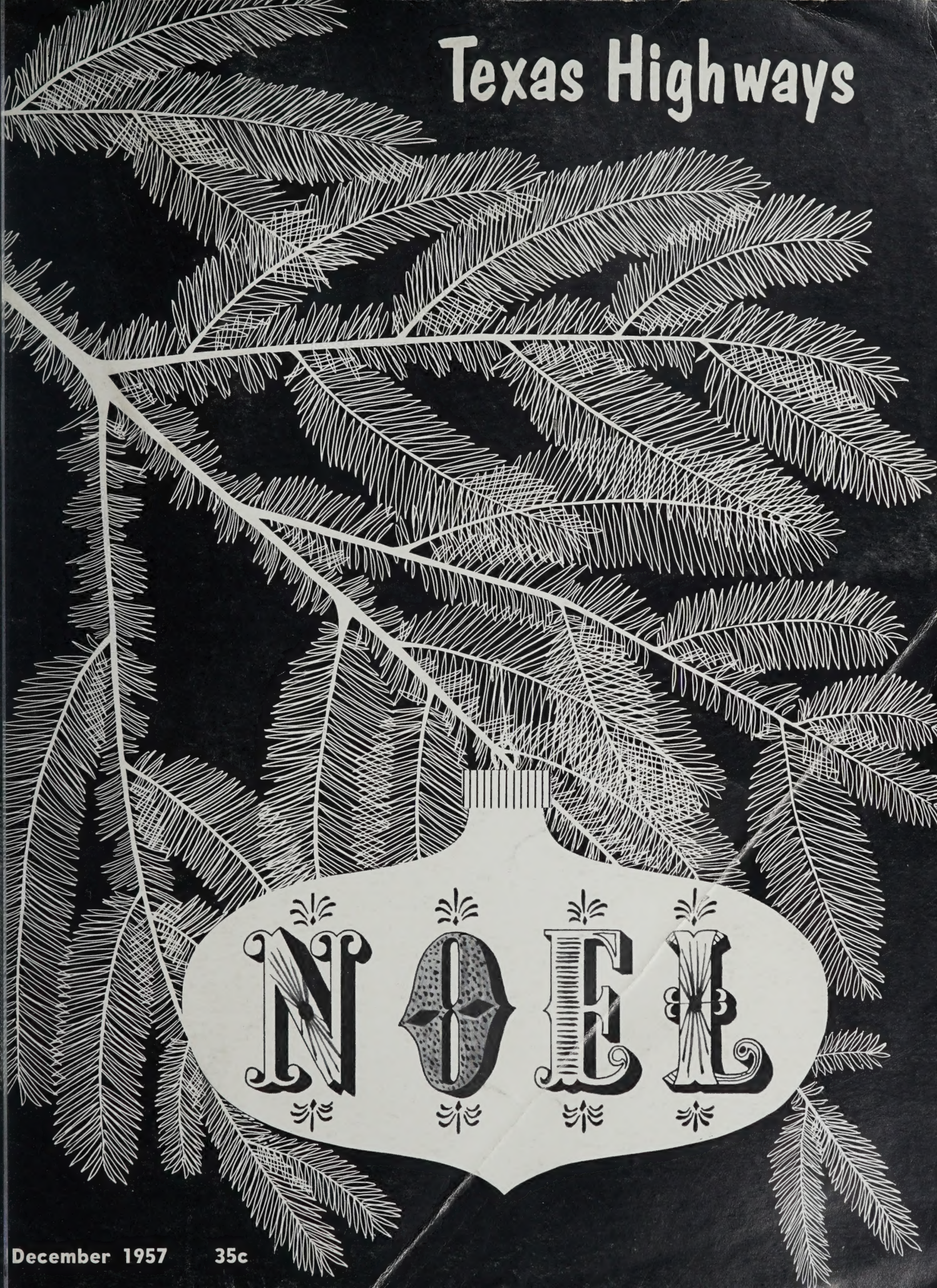
Texas Highways



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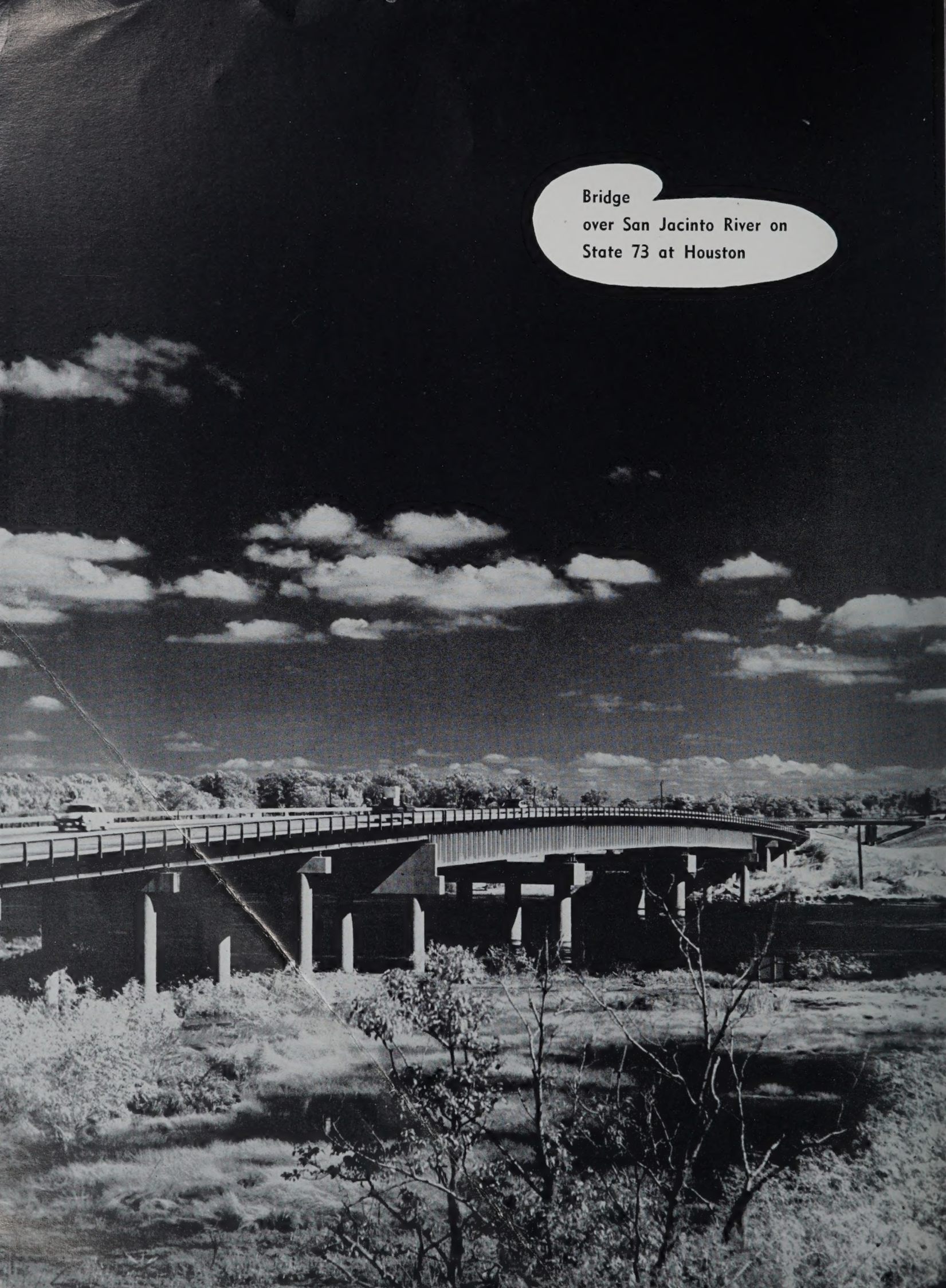
Bridge
over San Jacinto River on
State 73 at Houston

Texas Highways

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The earliest evidence that man wanted or needed mechanical help in his calculations came from the Chinese, Assyrians, and Egyptians, who figured their problems on an Abacus, such as this one.

Electronic

HISTORY shows that man's desire for mathematical help in calculations goes back much further than the development of the electronic computer which is proving more and more valuable to organizations throughout the country. The development of the computer is the result of centuries of experimentation by the foremost scientists and mathematicians of each period, since Pascal invented the first calculating machine in 1642. In fact, the first indication of man's dependency on a machine for mathematical computation came from the East where the Chinese, Egyptians, and Assyrians rapidly made their calculations on an Abacus. Children in Asia are still taught to count on this relatively simple, but effective instrument. The forerunner of today's electronic computer, however, may be traced to ENIAC, the first programed computer to run sole-

ly on an electronic basis (although made of switches instead of vacuum tubes). It was built by laboratories at Harvard University in 1947. Since then, there have been innumerable "brains" constructed, each one a spoke in the wheel of progress.

For over a year, such a machine, a type 650 Magnetic Drum Data-processing machine commonly called an Electronic Digital Computer, has been performing many of the routine chores for the Texas Highway Department, such as solving traverse survey problems, computing bridge design problems, extending bids for letting, computing triaxial test data, and computing earthwork quantities.

Though the computer will continue to be a great help to the engineer, as it has in the past twelve months, it can never replace him. Because the digital computer lacks the ability to think, it is powerless to make observations, to interpret situations, or to make comparative studies. It can, however, make yes and no decisions when instructed what to base the decision upon. For instance it can be told to compare the answer to some calculation with a given number and if it is smaller, proceed in a given way, and if larger, proceed in another way. The computer can calculate the dimensions for building a bridge after the necessary data has been fed into it, but it cannot decide what type of material should be used to construct the bridge. This must be done by the engineer. As one expert said, the machine "only does what it is told by the information in the punched cards." In other words, the results are only as accurate and dependable as the data which the operator feeds into the machine.

Because the machine is an inanimate object, despite its really remarkable powers, engineers often scoff when it is called a "brain." Those who are aware of its limitations as well as its capabilities, prefer to call the computer the "simple tool" or the "rapid idiot." The latter term has appropriately arisen because the computer can perform all mathematical functions known to man, many times faster than man, yet cannot think. In one minute, 62,500 ten-figure additions are completed by the computer, while a mathematician can figure five, at the most, unassisted, and ten, on a hand calculator. This is the computer at its mightiest. (Although it is capable of much more complex mathematics, the computer can figure additions the fastest.) Its slowest operation is division. Approximately 3,000 problems per minute are calculated, dividing twenty digits by ten digits to get a ten-digit quotient.

Computer

TEXAS HIGHWAYS wishes to express its appreciation to Mc D. Shelby, Research Engineer, Highway Design, and to John Mannix, Senior Program Engineer, Operations Division, for their help in the preparation of this article. The responsibility for staffing, operation, and maintenance is delegated to the Operations Division (D-21) while certain phases of development and adaptation have been assigned to Highway Design Division (D-8).

Any problem devised by man that can be reduced to a series of mathematical equations can be worked by the IBM machine. It can even play games—chess, checkers, nims, tic tac toe—you name it; the machine can probably play it if the game can be interpreted in mathematical moves so that a program could be compiled. Playing against the machine is like playing against a stacked deck, as some of the best chess players in the world discovered when pitted against a similar model in 1946, the Navy's Norc. It must be remembered that the game can only be as good as its human opponent who must compile the program by which the computer masters the rules, calculates in advance the best strategy, and selects the best move.

The electronic computer is composed of three main pieces encased in sheet metal — power box (supplies current); read and punch unit (reads 200 cards per minute, punches 100); and console (the "brain" which actually does the computing). To supplement the computer, several accessories are used, including printer (used as a big typewriter), reproducer (transfers portion of cards into other cards), collator (merges cards), key punch (used to punch engineer data into cards), and sorter (similar to that used on the $64,000 Question, it classes cards into the correct hopper according to punches.).

Located in the basement of the Austin Highway Building, the machine has enough tubes to equip 120 thirty-tube television sets. Fans inside the machine dissipate heat through the hood so that the computer never gets too hot.

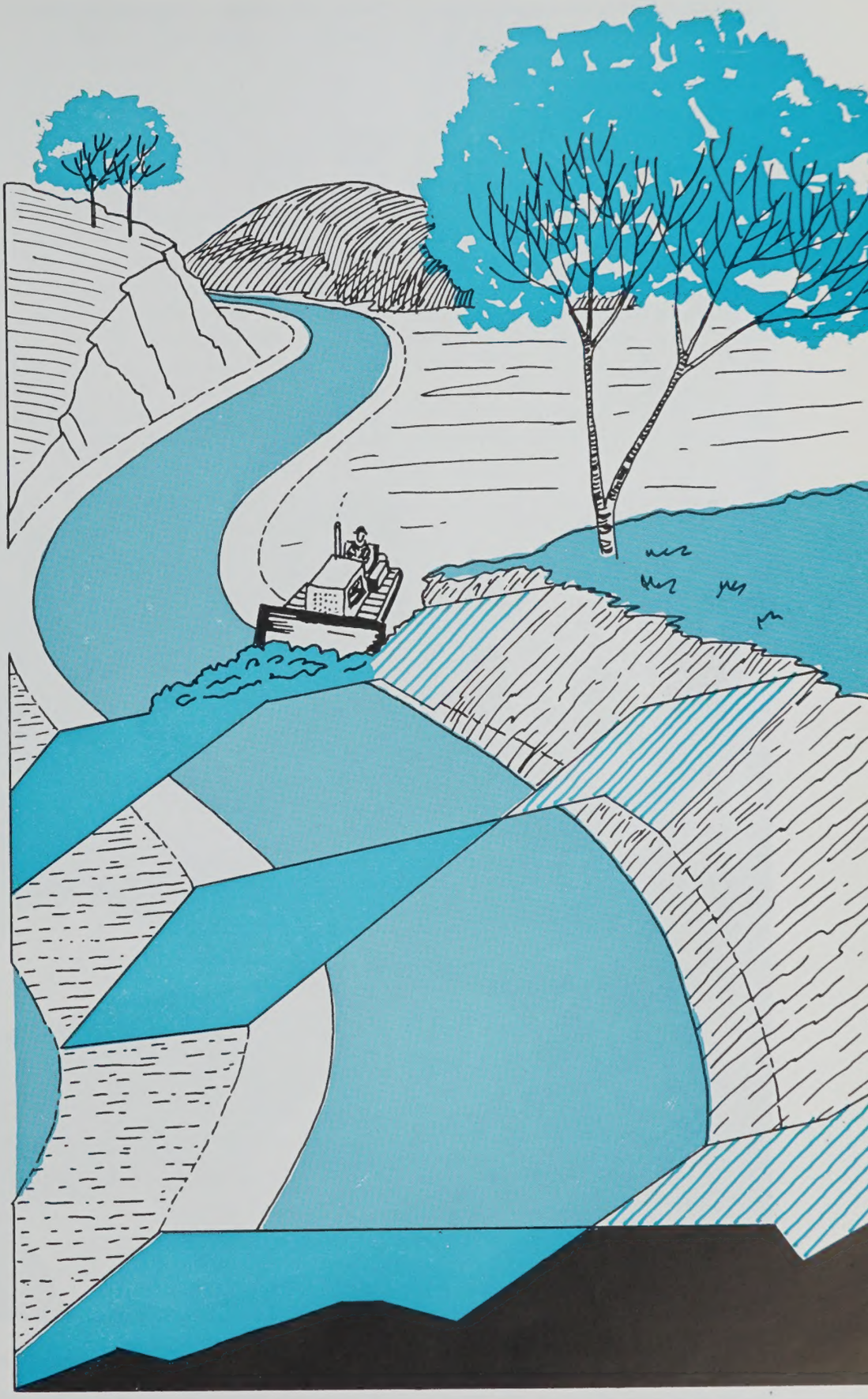
Before the problem can be calculated by the computer, a mathematician who has been trained in electronic computation must compile the program, a set of instructions which tells the machine what to do. The programer must help the engineer find the best way to put the problem into the machine, lay out the flow diagram, and write the instructions, which vary according to the complexity of the problem. Three months

A field crew in District 14 near Austin indicates mark sensing cards cross-section data instead of recording this information in a conventional field note book.

may be needed to write a fairly difficult program with, say, 1,800 instructions, while less than half a day may be spent in formulating a short program of 60 to 70 instructions (like computation of a triaxial test). After the program has been compiled, a test problem is run and the data is sent back to the engineer for verification, and then returned to the programer. The program can be used over and over for other problems of the same type merely by changing the input data cards.

If the experts are right, the computer will save the engineer thousands of man-hours per year, and the state, thousands of dollars. One of the most vital uses of the machine is in computation of earthwork quantities on highway grading projects. Approximately two hours (only ten minutes actual computer time) are needed to process one mile of road of excavation quantities by electronic computation, whereas 50 man-days were needed to accomplish this same feat by the graphic cross-section method. Original cross sections to determine cuts and fills and staking data may be taken directly on mark sensing cards by the surveying party instead of in the conventional field book. This innovation means that the percentage of mistakes is reduced. Cards are then punched by a machine which automatically checks its work at the rate of ten minutes per mile, 65 cents per mile. Using the conventional method of taking notes and hand punching the cards, this same distance demanded three and one-half hours of time and $7 of state money. If the proposed grade line results in an unacceptable excess or shortage of excavation, it is necessary to rerun only that portion (between any two points) which does not meet the requirements.

Solving traverse survey problems is another time-saving function of the electronic computer, which many engineers will be glad to discover. Here it is difficult to pinpoint the exact savings to be expected because the length of time to solve the same problem by hand usually depends upon



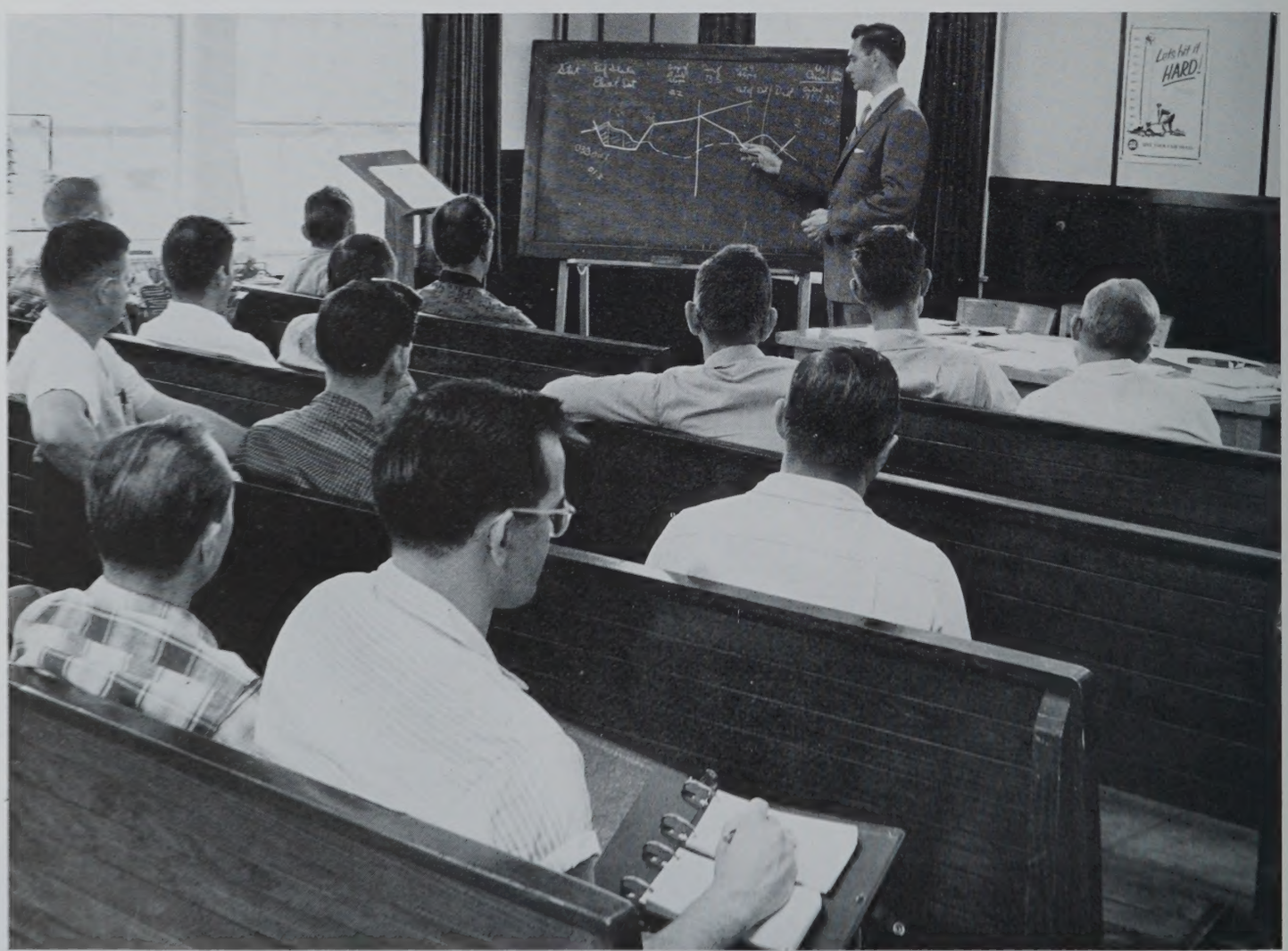
Many man-hours can be saved by use of the computer program in computation of earthwork quantities.

the individual engineer and problem. However, the "brain" takes less than half a minute to solve a difficult traverse including curved portions while it might take the engineer half a day.

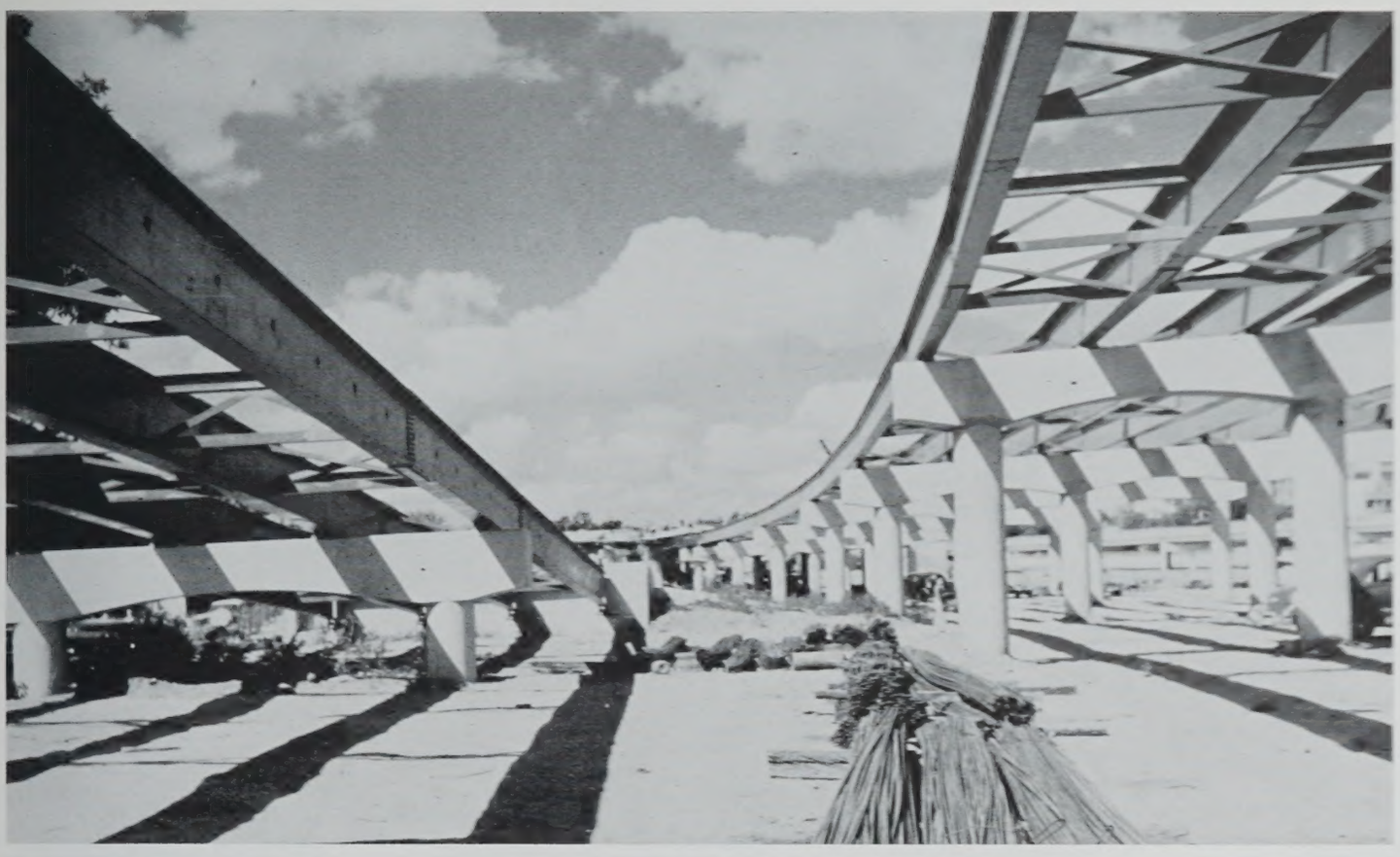
Another phase of engineering in which the computer will prove helpful to the engineer is in the computation of triaxial test data. The data observed during the test is reduced to punched cards for input to the computer. The output is the corrected values of unit stress and strain for direct use in evaluating the material under test. Although the use of mark sensing cards on this problem was considered, it was postponed for the present. When (and if) they are adapted, it will mean a reduction in errors and an increase in work production.

To date, the most spectacular evidence of its abilities to save time for the engineer has been shown in the field of bridge design. This includes both bridges on a horizontal curve with a vertical curve and superelevation and straight bridges with vertical curves and skewed bents. The machine will take the input data and compute the elevation or span of the bridge much faster than it could be done by hand. Instead of coming from the field, data for this type of problem comes from the drafting board of the design engineer, who knows exactly what he wants. The machine just speeds up his work at rates approximately 5,000 to 1, depending on the problem. Once a program has been prepared for a bridge, it can be reused an infinite number of times. This in itself will effect a veritable savings of engineering time. One of the most significant aspects of the use of the computer is that an engineer is now able to submit as many design factors to obtain as many solutions as he wishes. Because the factors can be computed rapidly, the engineer will thus be assured of getting the most economical as well as most ideal design for the bridge.

Through the use of the digital com-



Instructor Al Castello, Research Assistant from Highway Design, explains the workings of the computer to District 20 personnel. These instructional schools are held for the purpose of acquainting field personnel in the various applications of the Electronic Computer. They are available to any district interested by writing the Highway Design Division, File D-8, Austin.



Design calculations can be performed much more rapidly on the computer for a highway structure on a curve, such as the one above.

puter, the process of extending and analyzing of bids has been greatly simplified. The only real difference in the two methods is that the hand calculator has been displaced by the electronic computer. Before the innovation of this wonder machine, a large portion of personnel was tied up in lettings two days per month. Fifty man-days were needed to perform calculations now completed by five employees in five man-days. The ratio of actual savings is 240 to 1. There is a further reduction of time since proofreading of the required fifteen copies of the bids is eliminated; copies are prepared from cards verified by the machine which automatically checks its work the day of the letting. Futhermore, while it formerly took a total of fourteen man-days to type the extra copies, it now takes only two.

The Texas Highway Department is not the first such organization to take advantage of the digital computer. Highway Departments throughout the country have also integrated the machine into their routine work. TEXAS HIGHWAYS selected a few states which had a computer in use for a period of time and directed inquiries to the proper personnel, asking their frank opinion relative to the value of the machine.

Washington State Highway Department: "Our department is months ahead in location work due to the computer, which has been utilized by approximately 45 resident engineer offices since its installation last year. . . . For one floating bridge design, nine man-months of savings in design time was realized. In one resident office, office work was cut to one-fifth the time to complete a set of plans for approximately 30 miles of two-lane rural highway. On four-lane facilities, which require more time for design, savings is even greater."

Ohio Highway Department: ". . . Within a very short period of time, all twelve divisions of the Highway Department will be submitting their plan design problems to the Computing Laboratory for computation. (Four are now in a controlled performance.) . . . So far, our computer work has been restricted to computation of profile grade, superelevation, survey traverse, road design, and earthwork quantities. . . . As we utilize the computer in the varied fields of highway engineering, we will realize that it is an indispensable tool of the engineer."

California Highway Department: "A study was made of the output per man of our District Highway Design Departments for the years 1955 and 1956, and 1956 showed an increase in production of approximate-

While the machine is being prepared for traverse computation by Arabella Coleman, a panel is being set up for the digital computer in the foreground by Jody Overton. They are two of ten trained technicians who operate the electronic machine under the supervision of John Mannix in Operations Division.

ly 30 per cent . . . 50 per cent of this was due to our computer service. One squad leader formerly used from three to five men for calculating in the designing process. He now uses from one to two. One man designed an interchange in approximately one-half the time it used to take him. A squad leader . . . completed the geometric design of three freeway interchanges in two weeks."

Thus, from the experiences of others who have tried the computer, it is clear that use of the computer will mean a savings in man-hours and in cost, freedom from tedious, time-consuming calculations, and increased accuracy. An exact estimate of savings in cost is hard to derive but it is said by those who work most closely with the machine that if it is used just 20 per cent of the time, it will pay for itself. Any additional use will be profit. With the cooperation of engineers, who are urged to submit work for computation or to request more information about the computor, it should be possible to keep the computer occupied 80 per cent of the time. Thus, it will truly be an asset to highway engineering forces, as those concerned feel that the full possibilities for using the computer in our over-all operation is far from being achieved.

It must be remembered, though, that the 650 Electronic computer is in effect a "glorified" calculator, which will probably be replaced by an even more remarkable machine in the years to come. Conceived, constructed, and controlled by man, the machine is able to perform most of the routine work for the engineer, leaving him free to concentrate on that which only he can do—that which requires thought, imagination, and initiative.

ACCOUNTANTS MEET

More than 60 accountants from all the 25 districts, the Houston Expressway Office, Camp Hubbard, and the Austin office gathered in Austin on October 24 and 25 for their annual get-together.

Purpose of this yearly meeting is to discuss various accounting methods and procedures in use by the Department, and mutual problems connected with accounting work, the purchase of material, and right of way accounting procedures.

Conducting the meeting were Accounting Director George Pendergrass, Harry Johnson, and Glynn Drake of Accounting Division, and John Heim of Equipment and Procurement Division.

On the *first row*, left to right, are George Henderson and Billy J. Kennedy, District 1; Lee Reese and Bill Pollard, District 2; R. L. Medford and Allen Blodgett, District 3; A. K. Dixon and H. K. Ammons, District 4; A. N. Hanners and J. A. Neil, District 5; and W. A. Fox and H. E. McLauren, District 6.

Second Row: D. L. Roach, H. V. Briley, and R. W. Howard, District 7; J. D. Richardson and Clifford Park, District 8; E. C. Kunz Jr. and J. A. Williams, District 9; Max Byrd and W. H. Alfred, District 10; and C. A. Cook and Vastine Stephens, District 11.

Third row: C. E. Tipton, District 12; R. E. Rinn and D. O. Reese, District 13; Marvin Adams, O. C. Thoresen, and A. C. Cloer, District 14; D. W. Burks and Amos Hilburn, District 15; and F. M. Khoury and Eddie Puckett, District 16.

Fourth row: R. M. Wade and W. C. Vaughan, District 17; S. D. Davis, District 18; W. C. Dickinson and June Gunter, District 19; John De Lacie and Dan Morton Jr., District 20; Van Wheat and L. R. Wilks, District 21; and E. A. Boeheme and Kenneth Bond, District 22.

Fifth row: Bill Moore and DeWitt Allen, District 23; Jay Peterson and Earl Welch Jr., District 24; Howard Preston and Henry Baker, District 25; Billie Hines, Houston Expressway Office; and Paul Hancock, Norman Wilson, Robert Flaherty, and Jimmy McGuire, Camp Hubbard.

Sixth row: Bill Key, George Pendergrass, Melvin Green, Ray Boies, Glynn Drake, Harry Johnson, A. B. Cohn, Jay Howell, and John Heim, all of the Austin office.

Automatic

Spray Equipment

Palmer Massey, District Engineer
District 25

AFTER a thorough study was made of the signing needs in [illegible] 25, we found that our paint shop and sign painting equipment would not meet the ever-increasing demand for more and better quality signs. With this in mind we redesigned and enlarged our paint shop. The floor space in the new shop is approximately 6,000 square feet. which we found necessary to put our sign manufacture on a production basis.

We also realized we were not getting the quality of signs desired by the hand-spray method for the application of paint and binders for reflectorized signs. After checking with two other Districts using automatic spray equipment of an industrial type, redesigned for sign painting, we could see the need for a more compact, self-contained unit requiring less floor space. The cleaning and operation cost of the large machine was also undesirable, and the large exhaust system created a cost problem in heating and replacement of air in the spray room.

With the above factors in mind, we bought a one-gun, self-contained unit which requires about 100 square feet of floor space, or about one-half the amount required by the larger unit. By using one gun the overspray is held to a minimum, and the cost for a heating and replacement air unit was reduced to a fraction of the cost for the larger unit. This unit has been in operation about seven months and has required only one cleaning.

The uniform film thickness of paint and binders required for a desirable and brilliant reflectorized sign is easily achieved with this machine. This uniform and controlled film thickness has also eliminated our paint-drying problems, even in humid weather.

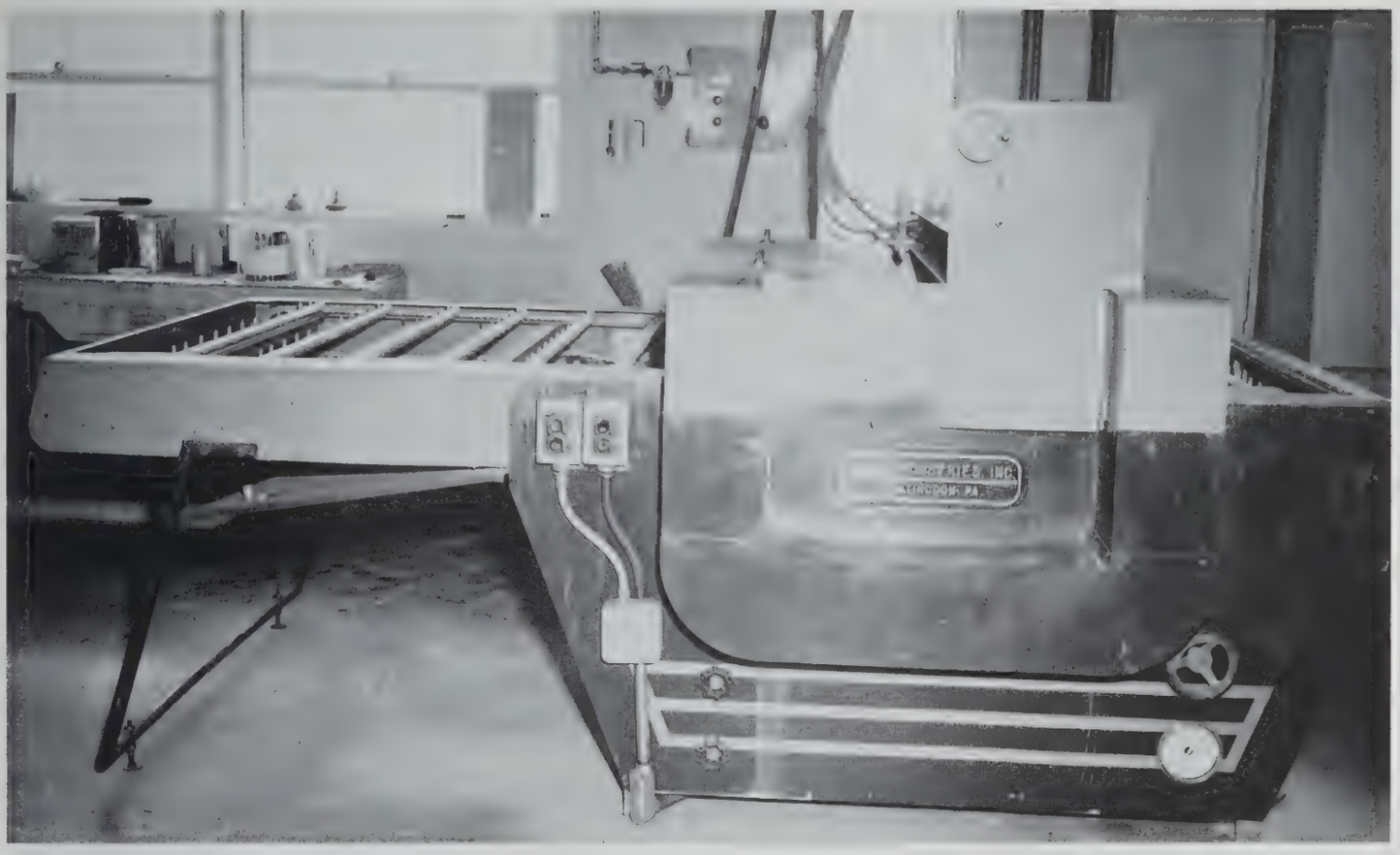
One coat of paint can be applied to more than 10,000 square feet of signs in eight hours. In other words, we can apply one coat of paint to from 500 to 700 signs per day. So we believe that our production needs for the future are well taken care of with this piece of spray equipment.

An improved type bead dispenser is being used with this machine. The uniform flow of beads is controlled by a mechanism in the hopper and not by the speed of the conveyor.

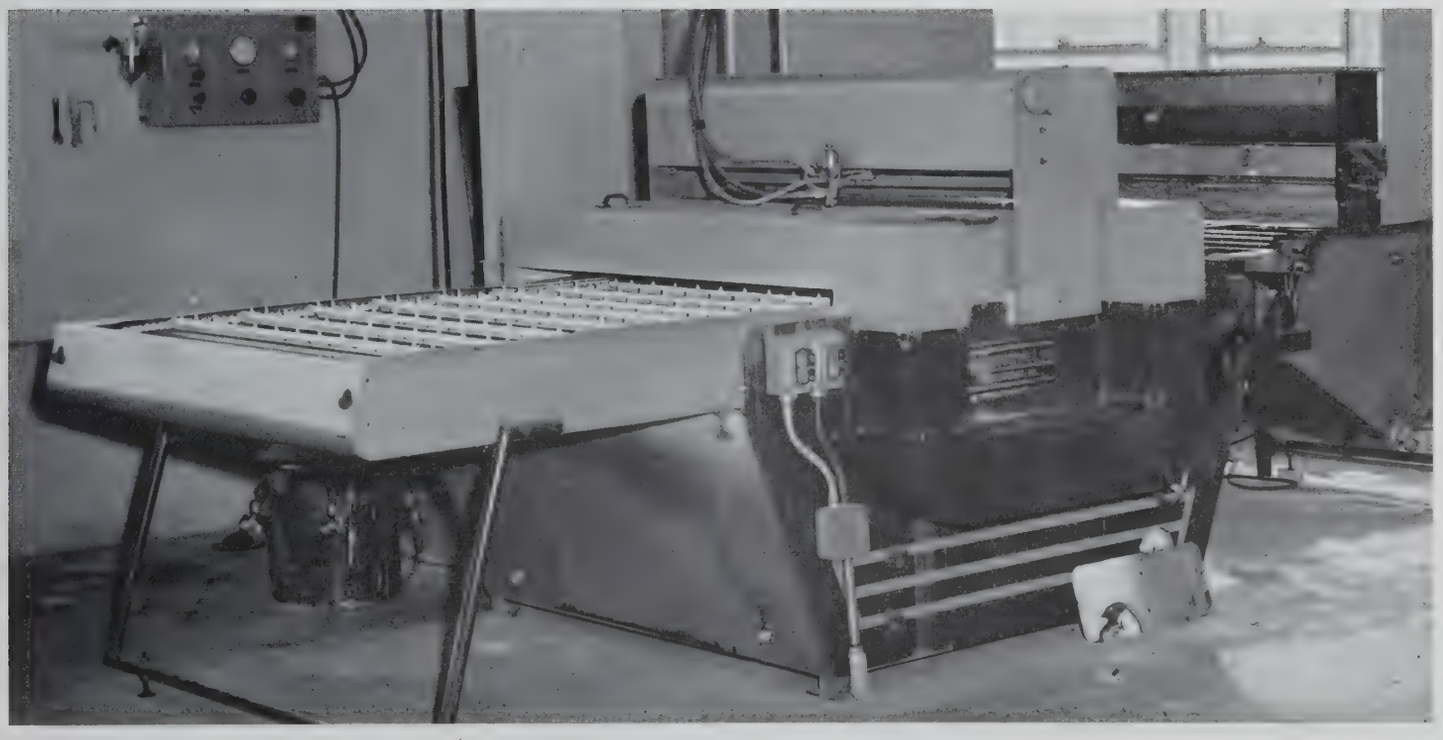
The dispenser conveyor and the paint-spray conveyor are attached and synchronized for a continuous operation in the application of binder and beads. In the application of the first two coats of paint the beads are cut off and the dispenser conveyor serves as an extension, making the unloading of signs much easier.

By the use of better binders, high index beads, uniform application, and screen process, we feel we are second to none in the production of reflectorized highway signs.

Front view—gun and loading end of conveyor.



Side view—speed indicator.



Over-all view of the complete machine.

Litterbags. . .

An Answer to our Cluttered Highways?

The real answer to our litterbug problem lies with the motorists themselves. They are becoming more aware of their responsibilities for keeping our highways clean. All our maintenance crews can do is clean up the dumped debris. The ideal solution would be to eliminate the trash completely by not tossing it out as we drive along.

A perennial problem, the litterbug, has plagued public officials for years, proving as incurable as the common cold, and as annoying. Its presence is recognized throughout the country, as evidenced by a nation-wide drive begun in mid-November to rid the roads and parks of unsightly debris strewn by thoughtless motorists. (The campaign is sponsored by Keep America Beautiful, Inc.) Some time ago, though, a few farsighted individuals diagnosed the situation, and prescribed an antidote—litterbags. These are sacks which could be carried in cars until a proper disposal unit could be found, thus eliminating the litterbug.

Various organizations across the country hopefully pounced on the idea as the answer to the pesky problem. However, they had no way of knowing to what extent the litterbags were succeeding in reducing litter from the highways and roadside parks. Therefore, to determine the effectiveness of the litterbags, the Texas Highway Department decided to make a survey. In June, 50,000 green and brown bags, donated by the Texas Motel Association, were distributed to the Seven Highway Travel Information Bureaus in Waskom, Wichita Falls, Laredo, Orange, Denison, Texarkana, and Canutillo. For four months, each motorist stopping at one of the bureaus was offered a litterbag. Bureau attendants noted that both interstate and intrastate motorists seemed genuinely pleased with the gesture, again indicating that the traveling public is well aware of the problem. However, relatively few of the bags were found or observed by Highway maintenance personnel. This strongly indicated that the majority of motorists kept the sacks, either dumping the contents and reusing the bag in the car, or did not use the bag at all, and continued to discard debris along the way.

After the test period (June, July, August, and September), in which the 50,000 sacks were distributed, approximately two hundred maintenance foremen throughout the state were polled for their comments on the value of the litterbag program. All but one of the 25 districts re-

Keep Texas
Beautiful

turned the questionnaire compiled by the Information and Statistics Division. The poll is the first known yardstick obtained for measuring the merits of the litterbag. From their comments, it was ascertained that a majority of those responsible for the upkeep of the highways and parks approved of the litterbag. Percentage wise, about 70 per cent commended the idea, 20 per cent opposed the plan, and 10 per cent did not comment on the value of the litterbag. Most of those in favor of a wide-scale distribution of litterbags felt that all motorists would have to have an opportunity to receive the sacks, and that proper disposal units must be provided for the bags. Most of the opposition came from crewmen who blamed the local motorists, mostly home folks, for dumping and strewing litter on the roadway. They advocated a little publicity and stricter law enforcement to make the public more conscious of the problem instead of the litterbag. In their opinion, litterers would continue to toss trash out the window rather than take the time to use the bag. Judging from remarks received from bureau attendants and maintenance personnel, it does appear that local people are the worst offenders. As one individual summed it up, ". . . people will do things at home they would not dream of doing somewhere else."

There are two relatively new innovations, both in automobiles, which Department personnel feel will gradually help hold litter to a minimum: air conditioning and built-in rubbish compartments. Motorists are fast demanding that their cars as well as their houses be air conditioned, and few will wish to be bombarded by a blast of hot air, and will probably utilize either the litterbag or rubbish compartment. In some 1958 models, the manufacturers have already installed a simple litter compartment. However, at present, the best solution seems to be the litterbag, as borne out by those queried.

Speaking for the Ballinger Section of District 7, H. P. Largent said, "The psychological effect will pay off by just letting the traveling public know we sincerely desire to have clean highways and parks."

"We have received many comments from tourists pertaining to the litterbags," revealed Neil Cox, Senior attendant at the Denison Travel Information Bureau. "Most of them agree that it is a good idea and some have wondered why Texas hasn't started something like this sooner. They (litterbags) seem to be making people more self-conscious about throwing trash on the highways."

A practical aspect was noted by Floyd J. Kelley, District 2: "After getting motorists acquainted with the practice of using litterbags and mindful of the necessity of keeping our roadways free of rubbish, the result might well justify the effort and expense of the litterbags and lessen the maintenance of cleaning right of way."

Supporting Kelley's statement is the comment of Printes Chandler of Polk County in District 11: "One bag used will offset the cost of 100 bags in labor and equipment."

Although the general consensus was that litterbags would help to reduce the rubble on highways and parks, there was almost unanimous agreement that a better system of distribution must be found. This was especially true of those who claimed they were too far from points of distribution to benefit from the bags. Those polled came up with some pretty practical proposals for making litterbags more accessible to a greater percentage of people.

Several good points were brought up by maintenance personnel in District 12. J. D. Cook: "Litterbags could be made available with very little cost to the state by letting large companies distribute these through advertisement." Bert DeShazo: "Use litterbags through the Chamber of Commerce, Lions Clubs, Garden Clubs, and motels." J. N. Ashcraft: "I think if they were made available to the motorist through service stations they might do some good."

Not all the interesting ideas came from District 12, however. A Senior Maintenance Foreman in District 2, Earnest C. Clay, said, "I believe a metal rack for holding these bags should be put in all roadside parks for motorists to use in continuing their journey, with this printed on the rack: 'Help Stop a Litterbug Please'." And District 6's J. C. Poarch had this to say: "We believe that this program should be handled through motels, service stations, and possibly cafes, as these establishments are in contact with motorists at all times."

Surprisingly enough, Texans themselves got the blame for much of the misuse of Texas property. Quite a few of those polled agreed with Herbert Rouse, District 16, "Nearly 100 per cent of the trash on our highways comes from our own Texas citizens. Visitors to our state seem to appreciate our roadside parks and are very good about cleaning tables and placing garbage in places provided."

"Let us not blame the out-of-state tourist," advised J. L. Stephenson, District 12, "give the native Texan a thought."

". . . These containers may be useful to tourists and cross-country motorists, but it is my opinion that about 98 per cent of our litterbugs are local people," announced Ray McKinney of Kleberg County, District 16.

"I believe a high percentage of the trash on our rights of way is scattered by local people hauling trash in pickups and cars, and not motorists. I wonder if it would help if the dump grounds were fixed and maintained near beer taverns in wet counties," wrote W. O. Womack, Maintenance Foreman, Trinity County, District 11.

Womack seems to have hit it right on the nose according to comments from other maintenance personnel across the state when he mentioned beer. Out of all the varieties of litter mentioned as marring the post-card beauty of Texas's tourist spots and highways, including cardboard boxes, cartons, old tires, napkins, paper, bottles, newspapers, and old lumber, beer cans were tabbed again and again as the worst offender. For instance, the

sentiments of many of the foremen were echoed by J. H. Douglas who said: "Eighty-five per cent of the litter on our highways is from local beer drinkers." To combat this, Hubert Fields of Junction, District 7, suggested that breweries and bottling companies print some kind of wording on their products, reminding the public not to litter the roadway with the containers.

Since local Texans were pinpointed as the worst litterbugs, quite a number of highway employees in the districts urged that a widespread educational program be initiated if use of the litterbags were to have any real, notable success. "The only answer to our litterbug trouble is through extensive radio and television programs and civic organizations to educate the public, as well as strict enforcement by cities, counties, and highway patrols," stressed Ralph Self, District 12. "The public is not behind the litter problem as it should be. It should be made conscious of this problem."

Self seems to bear out N. O. Miller's contention that "Pressure is needed to get local and state law enforcement agencies to cooperate more fully on the project of cleaning up our roadways." Miller is a Maintenance Foreman in District 24.

However, complete apathy of the public was disputed by some of the maintenance foremen. Bert DeShazo, District 12, contends that his county is "all out to keep our county and state clean and is very strict on violators. They are always running down and checking on trash dumpers." Further evidence that some effort is being made to cope with the problem comes from Brazoria County where J. W. Gray revealed they have an organization to fight litter. Through this organization, litterbags have been distributed which "have helped a great deal though we still have litterbugs."

Not only the distribution to and education of the public must be considered before the Highway Department can achieve total victory over litterbugs, but the disposal of the litterbags must also be contended with. If motorists lazily discard the trash-filled sacks on highways instead of in proper disposal units, then the purpose of the litterbag is defeated. Improper disposal has furnished much of the ammunition for opposition to the plan.

F. E. Arrington, District 14, states the case for the opposition, "We feel that distribution of these bags to motorists would not justify the expense involved in making them available, unless motorists would be willing to stop and deposit them in incinerators or trash barrels. We feel the majority of motorists would rather toss their rubbish out the window while driving down the road than take the time to stop. If this were practiced, the state would not gain by trying to beautify the highways, litter would remain, and the expense involved for pickup of this trash would not decrease."

However, this was overlooked by many of the highway personnel who felt that it was better to have trash in bags than lying loose. As C. B. Thames, District Engineer at Bryan, said, ". . . even if the litterbags were strewn along the roadway, the cost of cleaning the right of way would decrease due to the fact that rubbish would be more consolidated."

Patience was recommended by W. L. Youngblood, District 6, who thinks it will take time to get people to dispose of them properly instead of just tossing them out the window. He suggested that a note be printed on the sacks—"Place me in roadside parks when full; don't toss me on roadsides." Youngblood also mentioned that the sacks could be made larger, with a flap and clip at the top to prevent the trash from being scattered or blown by the wind when tossed out of windows.

It is clear that if the public can be alerted to the need for proper disposal as well as the existence of litterbags, unsightly trash could be greatly reduced. Specific suggestions, some of which have already been tried or considered by the Department, were given by personnel.

R. O. Cox, Maintenance Foreman from District 22, reported that O. L. Crain, Assistant District Engineer, came up with an idea of "car manufacturers building a litter compartment in cars which would be so constructed that service station attendants could empty them as a free service."

William I. Ivy, District 5, recommended that steel oil drums be placed at convenient places in the barrow ditches for motorists to deposit the bags."

"I personally believe we should have a sufficient number of containers located at points along the highways for the convenience of motorists . . . and before long we would see a much cleaner and more beautiful state. Barrels could be used for these containers, chained to a permanent base, and equipped with lids," remarked John D. McDowell, District 4.

Because of its experience with litter barrels in roadside parks and reports from others who have tried them, the Highway Department has vetoed the litter barrel. In effect, we would become glorified garbage collectors for local people, with little of the litter being removed from the highways.

To date, one of the most positive results of the litterbags has come from Harris County. According to Jack H. Gibbons, District 19 Maintenance Foreman, "We often get requests for bags, usually from out-of-state cars. On many occasions on U. S. 80, we have found bags full of litter, apparently thrown out of the car. Although this is not good, at least the litter is congregated. We are making some progress, slowly, but definitely on the plus side."

Though progress has been slow, indications show that one day our highways and roadside parks may for the most part be free of unsightly litter, making both Texans and tourists proud. As Eric F. Bartz, District 14, said, "At least the public has not been littering the highway with them. Therefore, the litterbags must be used to good advantage."

Mary's Christmas Journey

Compare this 90-mile journey made 2,000 years ago and taking almost a week to complete with the hour-and-a-half trip today from Dallas to Waco—in your chrome-plated, super-engined automobile whizzing along the streamlined thoroughfares marked with well-placed road signs.

And Joseph also went up from Galilee, out of the city of Nazareth, into Judaea, unto the city of David, which is called Bethlehem; (because he was of the house and lineage of David:)

To be taxed with Mary his espoused wife, being great with child.

And so it was, that, while they were there, the days were accomplished that she should be delivered.

Luke 2:4-6

And so it was that a journey made 2,000 years ago is still the most publicized of all journeys.

You know the story. Caesar Augustus decreed that all the world should be taxed, everyone in his own city. So Mary, espoused of Joseph, set out with him from Nazareth in the hills of Galilee for Bethlehem. They left at dawn, traveling in a group for safety. Carefully, slowly, this little group made their way along the rough roads, guided only by stones and rocks left as landmarks by those who had traveled that way before.

They traveled about fifteen miles a day, Mary riding the donkey, Joseph gently leading the sure-footed animal along precipitous paths. After hours on the road, the travelers reached the Plain of Esdraelon (known as the Valley of Jezreel) where, weary and worn, they camped. After a night's rest, they rose at dawn. While they hungrily munched the figs, cheese, and bread which Mary had placed in the saddle packs, Mary and Joseph studied the countryside around them. Joseph pointed out the Mound of Megiddo to the west, once famous as the chariot city of Solomon which twenty centuries later was to be uncovered by archeologists; and in the north, the round knob of Mount Tabor.

Refreshed, the group moved on, through Jenin, heading toward the rich highlands of Samaria. By the time they had come to the Plain of Dothan, it was again dusk, and after supping on bread, Mary and Joseph fell asleep with the others. Their humble bed was along the ageless trail which now intersects Macadam motor highway. The next day, the group pushed on to Shechem, earliest capital of the Kingdom of Israel, but bypassed Royal Hill to avoid meeting any of the hated Samaritans and because they were too travel-worn to be seen amidst the luxury of that place. In an old caravansary they found lodging for the night—their first night's sleep under a roof since they had left Nazareth. Here they also replenished their supply of bread for the remainder of their journey. Two miles beyond Shechem, at Sychar, they refilled the skin water bags they had filled at Nazareth's deep well at the start of their journey.

As they rode through the narrow pass beyond Shechem, well-patrolled Roman roads assured the travelers of a certain amount of safety from highwaymen and feuding people. They must have been glad that some of the taxes they were paying Caesar were protecting them as they rode here through the notorious Valley of Robbers. Mary may have recalled the words of the great woman judge and Hebrew poet, Deborah, that the highways 1,100 years before Christ were unoccupied and travelers walked through the byways because of the Canaanites. Little did Mary realize that 2,000 years later, there would still be fighting and hatred between the two lands, making it still unsafe for travel: the Jews of Israel (Nazareth), and the Arabs of Jordan (Bethlehem and Jerusalem).

Slowly, they moved forward, over the perilous trails of Mount Ephraim to Bethel, the hilltop village twelve miles north of Jerusalem. Biblical authorities believe that Mary and Joseph reached here on the Sabbath, and so spent two nights. Their religion decreed that pious Jews should

walk only 2,500 feet on the Sabbath.

Thus, strengthened from the long rest, the group once again pressed on to Bethlehem — through Beeroth, Ramah, Gibeah. From the path, Joseph showed Mary Mizpah, where Saul had been crowned the first King of Israel.

The journey required the better part of a week. When the group finally caught their first glimpse of Jerusalem, they hurried on eagerly, knowing they were nearing the end of their long journey. At dusk they entered the sacred city through the Damascus Gate. Because it was so late, the crowds so big, and Mary so tired, Joseph stopped only long enough to purchase food (and a treat for Mary—sweetmeats) and left the humming city through the Gate of the Friend. Joseph almost pushed the donkey down the steep grade south to Bethlehem, and up the ridgy spine of the Judean Plateau. Wearily trudging along, they savored the view of the Dead Sea to the east, and the purple hills of Moab to the left. Then, one mile from Bethlehem, they halted for a last time to get water before climbing the last hill into the walled town, where Joseph was sure that he could find a room for Mary at the Inn. Her time was near.

Such was not the case, for all, near and far, Christian, Moslem, and Jew, know that the Christ child, born that night in Bethlehem, first lay his head in a manger. A kind innkeeper, with nothing else to offer, gave them the use of his grotto. In this crude setting, Mary, of the virgin birth, wrapped her newborn son in swaddling clothes, calling his name Jesus, as she had been bidden by God.

Perhaps she, too, from her bed of straw could see the celestial star shining down on her Child and hear the joyful angels heralding the birth of the King. There, on that hillside stable in Bethlehem, Mary's journey came to an end—but a new era began with a new concept of faith; a course was to be plotted which if followed by all mankind would truly result in "peace on earth, good will toward men"—for the waiting world.

TPEA Awards

Ralph Waldo Emerson once said, "The reward of a thing well done, is to have done it." However, for some years, state employees in Texas, including members of the Highway Department, have been getting recognition for enterprising inventions and ideas in addition to the personal satisfaction from knowing they have in some way added to the improvement of their work.

The recognition comes from the Texas Public Employees Association which sponsors a Merit Award Contest twice a year to encourage the development of new ideas and good work. For the top three suggestions in each category—Office Procedure, Public Welfare, and Public Construction—the organization presents prizes of $100, $50, and $25.

Invariably, Texas Highway Department employees walk off with the top prize in their category, Public Construction, as did J. H. Doss of Houston this year. For developing a flex-beam barrier washer and sprayer,

Outgoing president John B. Nations, Texas Highway Department, delivered an address at the Twelfth Annual Public Employees State Convention in Austin recently. Nations is head of the Equipment and Procurement Division.

Jack Cawthorn, Merit Award Committee Chairman, presented the Merit Award of the Year to J. H. Doss for his invention of the flex-beam barrier washer. Doss is with the Highway Department in Beaumont.

The flex-beam barrier washer was designed to eliminate the necessity of washing a six-mile area on U.S. 75, Harris County, at two-week intervals.

Doss was named winner of the August Merit Award Contest. His invention earned him the distinction of being chosen Merit Award Winner of the Year—and an additional $100. Both of his awards were presented at the Twelfth Annual State Convention of TEA held recently in Austin.

Competing with Doss for Merit Award Winner of the Year was another Highway employee, J. W. Jones of Beaumont. Jones was Merit Award Contest winner in February.

However, Doss's flex-beam barrier washer got the nod from the judges. The essence of the invention, which was used on the Gulf Freeway, U. S. 75, in Houston, is that it eliminates an almost continuous hand-washing operation by a highway crew. In one-half a day, the washer—moving at approximately three miles per hour—can clean the entire six miles of the road film deposited on the railing by the 85,000 or so cars traversing the strip daily. Previously, the barrier was washed at two-week intervals. Officials foresee that this extremely practical device will one day be employed across the state.

NEW BUILDINGS

Ever since the Texas Highway Department was first established in Austin 40 years ago by the Thirty-fifth Legislature, it has been constantly growing to meet the needs of the state and public it serves. Even the last decade shows evidence of expansion.

Ten short years ago, there were 2.2 million vehicles registered in Texas, while today this number has nearly doubled to a staggering 4.2 million. During this same period, the mileage under maintenance has mushroomed from 27,626 in 1947 to an impressive 53,351.

A decade ago, the Department needed one employee for each three and one-half miles of highway built, maintained, and operated. This ratio has since risen to one employee for each three and nine-tenths miles of highway under maintenance. The super multilane highways now necessary for heavy traffic, and the additional responsibilities of the Department such as buying right of way, which were not required a decade ago, have caused the ratio of employees to miles of highway to skyrocket. In short, highways today must be bigger and better.

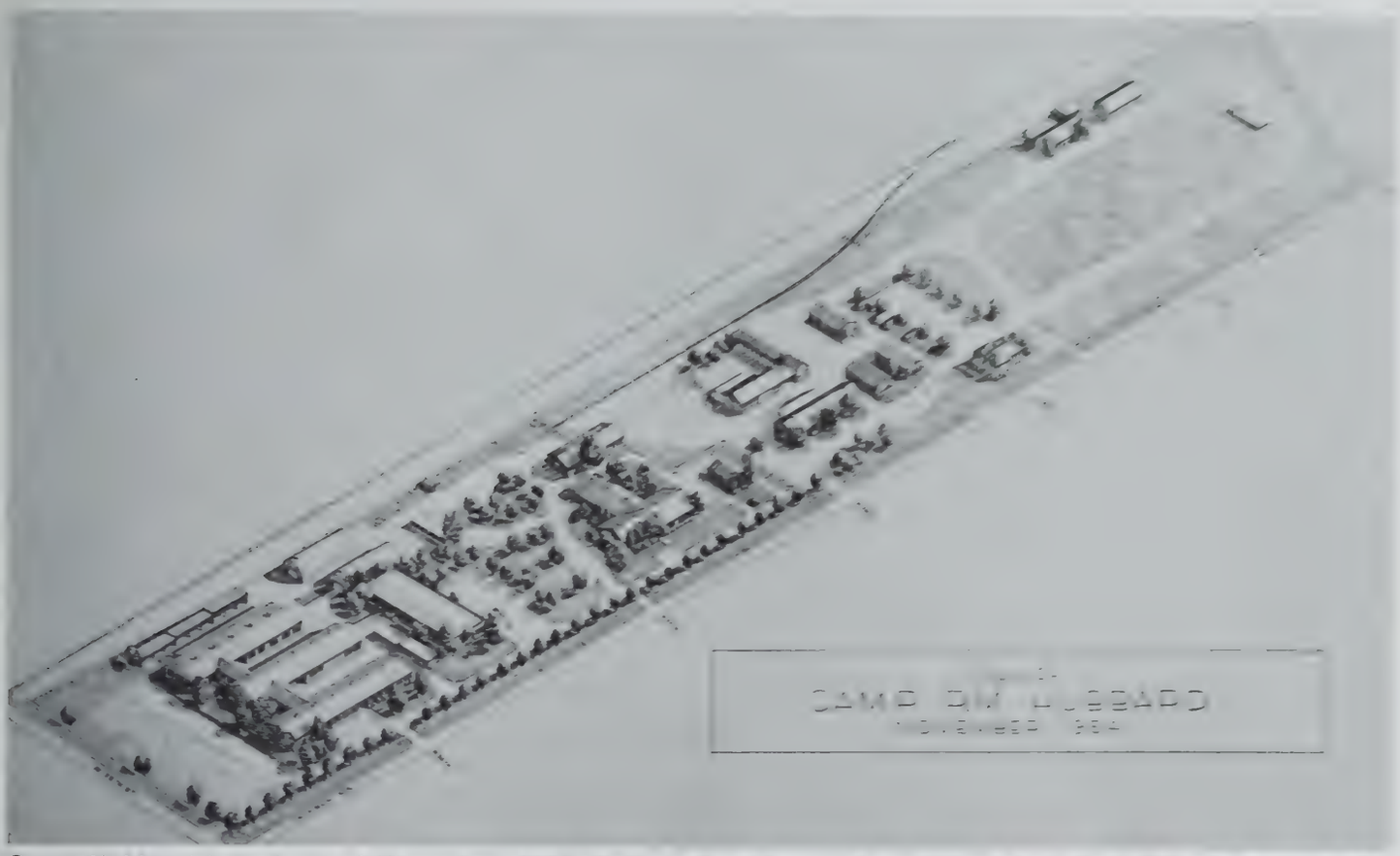
With the increase in personnel and equipment, buildings throughout the state have been literally bulging at the seams. To overcome this saturated situation, new buildings are in the planning stages in seven districts, and new buildings are almost completed in Districts 2, 10, and 19. Seven districts have new or remodeled buildings within the past few years.

Furthermore, this increase is also being felt in Austin where an expansion program is underway. In 1947, 132,766 square feet of office space were needed to house the 714 people employed in the Austin Office, compared to the 195,000 square feet of office space utilized today by the 1,126 highway workers. The offices are sprawled among nineteen acres at Camp Hubbard at Jackson and Thirty-ninth Street, a branch of the Main Office located in downtown Austin which itself encompasses one-fourth of a block across from the State Capitol, and space in the nearby Mutual Savings Institution Building for the Right of Way Division.

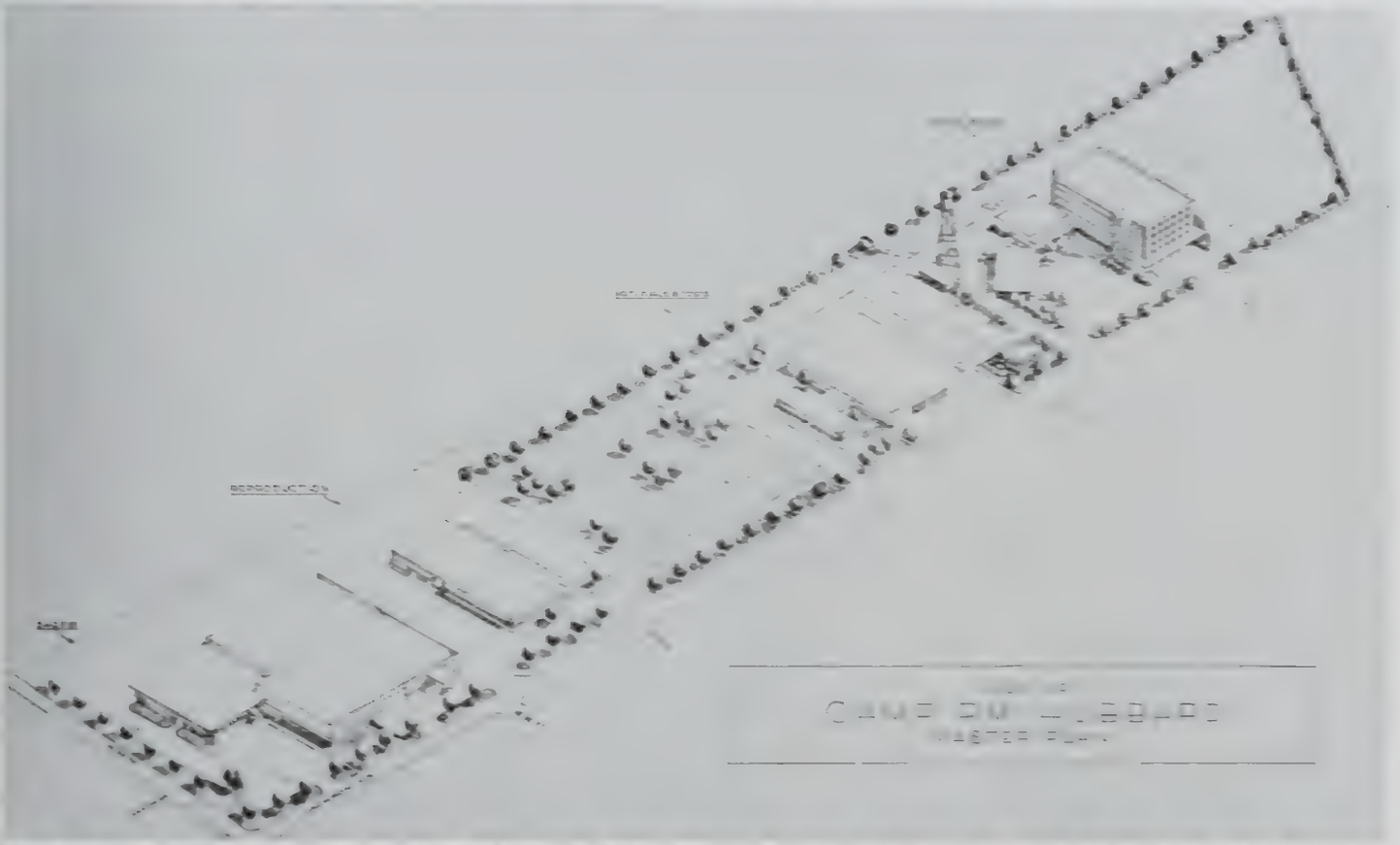
It is at Camp Hubbard that most of the construction is now progressing. According to R. J. Hank, Administrative Engineer, plans for a three-story addition to the Motor Vehicle Building at Camp Hubbard will be completed in about four months. It will follow the same architectural lines as the present modern two-story structure. As yet, Hank does not know which divisions will be transferred to Camp.

The Materials and Tests Division hopes to occupy a single-story $500,000 building at Camp Hubbard by February 1, 1958. Two wings, comprising an area of 35,000 square feet, will be divided between laboratory and office space. A. W. Eatman, head of Materials and Tests Division, estimated that the total expense for the air-conditioned structure, with new furniture and equipment, will be in the neighborhood of $750,000.

A new Materials and Tests Division single-story building at Camp Hubbard, seen here in perspective, will be completed and occupied by around February 1, 1958.



Camp Hubbard layout, as of November, 1954. Quite a few changes have taken place since this view was made.



The "new look." This view shows the addition of three floors to the Motor Vehicle Building (in the planning stages), the Materials and Tests Building (under construction), and the new Equipment Shops which are also in the planning stages.

IN some respects, Dallas and Fort Worth are coming closer together all the time. In fact, nothing but four-bits and a 30-minute ride separate the two cities now as far as the motorist is concerned. A turnpike prompted this closeness.

"The Turnpike," as Texans call it, is their Dallas-Fort Worth toll road which was opened on August 27 and later officially dedicated with speeches and ceremony on September 5. The first month of operation 466,478 vehicles (most of which were license-tagged Texas) left $174,178.40 in the six fare plazas so conveniently located they can't be missed.

These toll gates, sentinels over the entrances and exits of the roadway enclave, are manned by attendants who not only collect fares but can offer information and literature on items ranging from state-wide road conditions to scenic attractions. There are motorists, like the woman hauling a trailer load of pigs and chickens, who entered the special toll kingdom without stopping. She and the other would-be "free riders" are halted by a special Turnpike courier and are permitted to return to the entrance where alternate connections have been provided for those who prefer a free travel route.

For folks who discover at the exit toll gate they have left their money at home, attendants lie in wait with blank checks on which the red-faced may write in the amounts of 20 or 50 cents, dependent upon the length of the ride just finished. Two customers with neither pocket change nor bank accounts posed a new situation the first day of the Turnpike's opening. These drivers were the subject of much paper work before they were finally let off the road. Next day Turnpike books balanced again when both fares arrived in the mail.

The *modus operandi* at the Turnpike toll gates is similar to that in use on other turnpikes across the country. The motorist passes through two fare plazas. When he begins his journey, he is given a ticket identifying the point at which he entered, the class of his vehicle, the date and time of day. As his trip on the plush expressway draws to a close, he finds himself at an exit plaza where he pays the fare fixed for his class of vehicle and the distance it traveled. If he drives a six- (or more) axled vehicle from the Fort Worth entrance to the Dallas exit, he will hand the toll attendant $3. Any vehicle in the four tires or less category—passenger car, ambulance, hearse, station wagon, motorcycle, panel or pick-up truck—will be charged 50 cents for a one-way expedition across the Turnpike. The schedule of fares varies. Several ten-cent trips are listed for family cars and the four tires or less class—from Grand Prairie to Dallas Loop 12, for example. That great American convenience, the charge account, is part of the business picture of the Turnpike, too. A special 10 per cent discount on charges in excess of $500 per month is allowed by the Turnpike Authority. Trucking firms are eager patrons of a turnpike, according to reports from states which have owned these toll throughways long enough to know. It is important to truckers who handle commodities such as eggs, canned goods, bottled goods, furniture, fragile materials, and perishable products to avail

Looking more like tentacles on a giant squid than anything else, this arm of the toll road is the terminus in Dallas. More than $10 million alone was spent on acquiring right of way for the Turnpike.

themselves of not only a smooth route with fewer stops, but one which requires fewer shifts and is lacking in sharp curves. Their reasons: less breakage; substantial savings in driving time, fuel consumption and mechanical depreciation of trucks; reduced driver fatigue which, in turn, increases safety factors.

The Turnpike is an elegant little highway world of its own. Small wonder taking a spin on it is still a sightseeing experience for Dallas-Fort Worth natives as well as for visitors who hear it boosted as one of the attractions of the area.

Many are the modern innovations on the new toll road—the automatic axle counters, for instance. These register the class of a vehicle by the number of axles it displays; and the charge is figured as soon as the car, trailer, or motorcycle has rolled into a fare plaza. After a driver has paid his assessment at the last stop on the Turnpike, the cash and the ticket he held are mechanically whisked away to underground deposit vaults.

The layman will drive out of the last toll gates remarking most likely over his ride along a landscape devoid of advertising signboards and commercial establishments. This is one of the chief differences between the modern free express highways maintained by the Texas Highway

This view of the Dallas-Fort Worth Turnpike, looking southwest, shows the six-lane divided superhighway as it passes under Farm Road 157 (left center). Farm Road 157 connects Arlington (left) with State Highway 183 (right). Structures at upper center of photo are Turnpike maintenance buildings.

The $58,500,000 Dallas-Fort Worth Turnpike, linking the heart of Dallas with the heart of Fort Worth, stretches arrow-straight from a point just west of the Belt Line Road Interchange serving Grand Prairie. At right is the Trinity River, which was relocated and straightened to make room for the Interchange.

This construction picture on the Turnpike shows yet another design. Nearly 28 million pounds of structural steel and 19½ million pounds of reinforcing steel were used in the Turnpike's construction.

Department and the privately owned toll road.

Two restaurants and two service stations are the only businesses available on the toll road. These are located midway between Fort Worth and Dallas on opposite sides of the Turnpike. While stopped at this service center, motorists meet the pretty Tourette, who is really a receptionist hired and specially trained by a leading oil company to give highway and other travel information. The first month of operation the center netted the Turnpike Authority $17,-314.62 as its percentage of the sales.

Also midway—if travelers take a look inside the Turnpike Operations Building—is modern art's contribution to the exclusive roadway principality. This conversation piece is a wall mosaic 11½ by 24 feet executed by a cooperative pair of sculptors, one from Dallas, the other from Fort Worth. The finished work, made of Italian mosaic glass in more than 40 colors pictures a map of Fort Worth and Dallas connected by the Turnpike.

Distinctive signs of silver against a blue background add to the exclusiveness of the trip along the pay road. There are 200 reflectorized signs placed at key intersections throughout the Dallas-Fort Worth area. One newspaperwoman, after her first trip along the new route, commented ecstatically on these signs. As she put it, "Even myopic drivers like me should have no trouble seeing these aluminum-sheathed emblems placed throughout both cities . . . and, heavenly days, looking down the highway at any time you always have a visibility of at least 725 feet backward and frontward . . . a woman driver's dream."

Turnpike policemen, one sergeant and nine patrolmen, cruise the Turnpike 24 hours a day. Though they are a specially trained detail of the Texas Highway Patrol, their salaries and purchase and maintenance of equipment are the responsibility of the Texas Turnpike Authority. Users are urged to get off the main roadway and park on the shoulder to the right if an emergency stop is necessary. A white cloth or white paper held or fastened in the left window, and a raised hood are the signals to cruising patrolmen that help is needed.

Not too long after the Turnpike was opened, the resourcefulness of the watchdog staff was taxed by a motorist in distress. He had run out of propane. Turnpike patrol cars carry cans of gasoline, but propane is another matter, and this liquefied petroleum gas was the only thing which the stalled car was equipped to run on. Officers began a long search for propane through the medium of their car transmitter, finally locating a service station in Arlington which could supply the vital stuff.

Turnpike regulations fill pages with their do's and don'ts, their limitations and prohibitions. No pedestrians or bicycles with or without motors; no vehicles drawn by animals, no animals led, ridden, or driven on the hoof; no hitchhiking or loitering; no vehicles in such condition they are considered unsafe for use upon the Turnpike; and no vehicles with flat tires. The list is lengthy.

"You'll like the Turnpike . . . 30 miles in 30 minutes. . . . You'll enjoy the road that puts pleasure back in driving . . ."—So go the press agents' appealing mottoes in Turnpike advertising.

On the basis of national records, comparing the modern design of the $58½ million Turnpike with the average U. S. highway, the Turnpike will save lives, advance publicity proclaimed. There must be something to say in favor of the statistical claims made, for in the sixth week of its existence—a week which included football game traffic to two games in Dallas and one in Fort Worth, a perfect record was achieved on the Turnpike. Not a traffic accident of any kind for the nearly 100,000 vehicles which used the route.

There is no question but that superhighways, including the Turnpike, with controlled access, grade separation, and divided lanes, will offer motorists a saving in time, money, and lives.

PLANTING

along the r.o.w.

Just about everybody knows that fairies are famous for their mystifying powers to cast spells over people, but few realize that highways can do this too. When there is nothing but an occasional mirage or passing vehicle to break the monotony of driving, it's a well-known fact that the driver becomes lulled, the process, automatic; the danger, great.

To ward off the witchcraft of the highway and lessen the risk of wrecks, the Highway Department provides its own kind of magic by preserving and planting vegetation along the rights of way. Not only does this increase the safety and beauty of the highways, but it also plays a major part in the prevention of erosion. The Department long ago discovered that the most economical as well as aesthetic method of accomplishing all three goals was through the use of trees, shrubs, flowers, and plants.

Where possible, the Department encourages native growth. Innumerable kinds of vegetative life are indigenous within the borders of this vast state. This almost unequaled variety of growth is a by-product of the kaleidoscope of climates and soils common to Texas. By careful selectivity, the most promising growth, particularly trees, is left standing during construction of a new highway. Trees to be saved are marked by the resident engineer, who is guided by a tree surgeon when necessary. Bright yellow markings or string distinguish the trees to be spared from those that will be cut down by the contractor.

To discourage motorists from stopping on highways, fruits, nuts, and other edible growth are not encouraged or transplanted. The temptation to motorists to stop and gather these eatables would create a dangerous situation.

Anything that is either encouraged or planted by highway personnel must be able to survive under natural conditions. Its existence is complicated by hazards such as that of the strong air currents created by passing vehicles, which disturbs the plants. Also, the pavement and roadway drain away needed moisture—creating a very dry soil condition. There is still some speculation among the experts as to what effects, if any, the gases and other exhaust fumes have on roadside plantlife.

Because dryness of the soil is also caused by grass fires, the Department prefers to leave twigs and underbrush on the right of way to slow down the runoff. On the other hand, the only advantage of burning litter into a mulch is that potash is added to the ground. Instead of soaking into the soil, however, the water runs off, and the ground becomes more compact.

Most of this type maintenance work is done in the late fall and winter when other work has slackened. The old idiom, "Do it right or not at all," might well be considered a theory which the Department likes to practice as well as preach. For instance,

Stately palms line many miles of highway in the tropical Rio Grande Valley. In this area motorists find unique roadside plantings not found on other highways.

The pitcher plant grows in the vicinity of Gonzales and the Big Thicket. This plant is somewhat rare and unique in that it captures insects that crawl into its tubular blossoms seeking nectar. When the insects enter the plant, the flap immediately closes, sealing in the fly, bee, spider, or other victims.

in pruning, highway personnel are careful to saw dead or superfluous limbs flush against the tree trunk. Any tree wound two inches or larger in diameter should be painted or sealed. A razor-sharp saw rather than an ax is used in this process. If an ax is used, chances are that either the pruner or the tree will be hurt. Using an ax proves more costly in the long run, too. Special care is also taken with filling cavities. A professional worker is always assigned the task. With a poorly done job, the cavity tends to hold water and increase rotting in the tree.

There are over 500 kinds of native flowering plants grown along Texas highways. Alphabetically speaking, they range from "A" to "Z." Some of these plants, like Topsy, "just growed," but at least two and one-half tons of seed are distributed each year along our rights of way by maintenance personnel. Not only do the wild flowers present a sight suitable for kings, but they enrich the soil with nitrogen, magnifying its power of minimizing erosion.

During the blooming season, flowers are closely watched, and are mowed at the proper stage of maturity. The foliage with seeds is then hauled to barren spots and spread with the soil. The most likely areas for distribution are on slopes, approaches to cities and towns, parks and turnoffs, outside of curves, and cut slopes.

Some seeds, like the bluebonnet or mountain laurel, sleep for a decade or more before breaking through their blanket of soil. The length of time depends upon their being buried by soil and receiving sufficient rain during the proper growing season. When both these conditions are met, the seeds sprout, as witnessed last year out in West Texas where the composite of multicolored flowers carpeting the white sandhills in the Monahans area was breathtaking.

Although most travelers don't recognize them as such, there are some rare species prospering along the right of way in East Texas. Because of the abundant rainfall, just about everything does well in that vicinity.

Giant Spanish daggers are used in the dry, arid area of the western part of the state for landscaping purposes. Many species of cacti thrive in this dry climate. »

Due to the soil and climatic conditions in the Eastern region of the state, trees, natural flowers, and plants all do exceedingly well. However, because of the excessive rainfall, soil erosion must be watched more closely. Grassy shoulders are highly important in holding soil erosion to a minimum.

The spectacular sight of bluebonnets blanketing the roads in the spring is unsurpassed. Texas' state flower, this buffalo clover is very effective when planted on slopes.

At least 30 varieties of orchid flourish in the Warm Springs, Gonzales County, and Big Thicket areas. The two million acres of almost impenetrable jungle comprising the Big Thicket is also the breeding ground for another rarity—the pitcher plant. Lured by the nectar secreted on the tips of the yellowish pitcher-shaped leaves, insects venture further, seeking more honey, and haplessly fall into the water settled in the bottom of the plant. The "lid" then closes and the prey is trapped and devoured.

Texans can brag about their trees as well as their oil, cattle, and women, for just about every kind known abounds near the highways (at least 225 tree types are native to the Lone Star State), from the tall tulip in the East to the Spanish dagger cacti and salt cedar near the river banks in the West; from the semitropical palm in the Valley to the elm in the Panhandle. Texas can also claim another unusual species—the drooping juniper, which is not found in any other area of the United States, grows along the right of way in Big Bend National Park.

Roadsides are colorful sights in the spring and summer, but many people think that the beauty of the warmer months is surpassed when the leaves are accented by autumn hues. This is especially true in the hill country and far west after the first frost, when the ornamental cottonwoods and sumacs take on their fall coats. Wonderful colors from the gum trees—black, red, and tupelo—add to the charm of East Texas. The colors so beautiful to behold in the fall depend on several "if's"—if the sap in the leaves has the proper sugar concentration, if there is one good killing frost (rather than several minor ones), and if there has been reasonably adequate rain during the growing season.

Motorists disagree on which time of the year driving is most enjoyable. However, whatever the personal preference, traveling has been made more pleasant in all seasons because the Highway Department decided to step in and give nature a hand by planning and preserving vegetation along the rights of way. This vegetation holds aggravating dust and costly soil erosion to a minimum, it adds scenery and beauty, and most of all it is another built-in safety factor found on Texas highways.

If you think your lawn is big, how would you like to have to mow 540,000 acres. That figure represents the estimated amount of acreage the Texas Highway Department is responsible for keeping trimmed along the right of way on Texas highways.

OVER THE HIGHWAYS

Comments . . . from the Traveling Public

Recently my father, my mother, my four-year-old brother, and I were taking my brother (nineteen) and a friend of his to a church camp about 160 miles from here. We left right after church Sunday with a picnic lunch to stop somewhere and eat on the way. You see, I think the people in our state are very lucky because of our Highway Department because of you and your thoughtful workers taking time enough to make those little roadside parks. We use them a lot. We especially liked the little park outside of Goldthwaite. For this park and all the others let me say "Thank you."

Elizabeth Akin (12 years)
Austin, Texas

We liked your roadside parks. They are very well done. Your consideration for travelers in construction areas was far above average, and your highway signing is better than others.

Burlingame, California

Where strips have been added to old highways, the new strips are not the same level as the old, so it produces very bad shoulders that tend to throw a car out of control when forced to cross. However, in general, you have wonderful highways and it is a pleasure to drive on them, and the maintenance personnel seem very courteous.

W. M. Guynes
Erie, Pennsylvania

I returned from Gonzales to San Antonio by automobile Sunday morning (November 24) at 1:30 A.M.

Along the way, it was impossible to not be impressed by the consideration to duty that the Highway Department has given the people of the state of Texas.

That I had no accident, I thank God and the Highway Department, especially the Maintenance Division.

Robert W. Lord
San Antonio, Texas

Where do you get information on old things?

Like for instance, I have a mirror from the very first post office of Van Alstyne, Texas, and I would like to know how old it is.

Could you find out for me.

I think the first post office was in the depot, but I don't know for sure.

Mrs. A. S. Church
Littlefield, Texas

We liked the map of Texas. Best I ever saw, which was given by the Texas Highway Department. But—this is the fourth time I have tried to miss Dallas and always have to go through the business district because of the many signs. Confusing!! to say the least.

Mitchell G. Ulrich
Pasadena, California

Your highways, even detours, are good. Your road signs—perfect (how about altitude on some?).

Mrs. H. P. DeMay
Imperial Beach, California

To and From Our Readers

We have just returned from quite an extended auto trip and one of the most enjoyable parts was a diagonal trip across Texas from Raton, New Mexico, to Galveston. We surely appreciated the fine roads and the adequate highway markings.

Marion Wade
Coral Gables, Florida

There is a city some place in Texas that due to the culinary there nobody has bad teeth. No tooth trouble of any kind. Could you please tell me what city that is?

I have in mind trying to get them to ship drinking water to me for my children.

M. H. Wheat
Salt Lake City, Utah

We visited your state in June. It was most enjoyable. Tyler State Park is one of the finest we found going cross-country. The camp grounds were clean and the nice hot showers were so relaxing. The Information Station we stopped at was very courteous and helpful. Hope we can visit your state again.

Mr. and Mrs. Jack Day
Columbus, Georgia

Permit M. E. to compliment you and your staff upon the jam-up good job you are doing in editing this worthy paper. It is a credit to the Texas Highway Department and to the State of Texas.

M. E. Worrell
Junction, Texas

"While you're there, Fezby, see if the shoulders need blading."

About the Cover . . .

We take this Christmas opportunity to deviate from our policy of using highway maintenance, construction, or some tie-in on our cover. Even engineers, come Christmas, stop thinking in terms of cut and fill, angles and curves, and dwell on thoughts of holly and mistletoe. (Some of our employees in snowed-in areas may have to celebrate piecemeal, but even on the job, the Christmas spirit prevails.)

To all our readers and contributors, those of us who work on TEXAS HIGHWAYS wish a very happy holiday season and a New Year filled with peace, prosperity, contentment, and pride in accomplishment of your job—whatever it may be.

Artwork for the cover was done by staff artist Bob McCarty.

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Texas Highways

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HIGHWAY SIDELIGHTS

Gordon K. Shearer, Historian
State Parks Board

Two hundred yards south of San Manuel U.S. Highway 281 is intersected by Texas Highway 186. Take State 186 and a short drive will bring you to a directional sign which reads: "Sal del Rey."

The sign points to a sandy local road. Follow it for a few miles and watch sharply for a lane going into a cultivated field on the left. Go down this lane about half a mile, and a 700-acre lake of salt water will spread out to surprise your eyes.

Hard to find today, the lake 200 years ago was the most visited place in what is now Hidalgo County, Texas. Then it was a part of New Spain. Long trails, traces of which are still visible, connected with a large part of the settled land on both sides of the Rio Grande. The settlers needed its salt for themselves and their cattle.

Besides its salt, the lake produced a legal puzzle that state and federal courts tried for years to solve. Sam Houston made its problems subject for debate on the floor of the United States Senate. He carried the issue into a heated political campaign of 1859. During the Civil War, Confederate soldiers took possession and furnished needed salt to the armies of the South until a Federal force landed suddenly at Port Isabel, raided, and destroyed the salt works.

The puzzle of the lake was who owned the salt. In 1798 A.D., King Charles the Fourth of Spain decided to reward a gallant soldier, Captain Juan Jose Balli. Captain Balli received a grant of about 400,000 acres of land. The lake was on part of this land. Although there was no stated reservation in the grant, the law then was clear. It was "El Sal del Rey"—the salt of the King.

Spain's territorial flag gave way to the banner of Mexico. Then the Lone Star Flag of Texas became the symbol of sovereignty and a great controversy began. Texas law embraced the common law of England. Under the common law of England title to minerals in, on, and under land went with the land. There were claimants to this land tracing title back to Captain Balli and others who relied upon certificates issued after Spanish control had ended. The salt in the lake made it important to the litigants. More important to all Texas was that whatever was decided to be the law about the salt would apply also to another mineral—OIL. It took a new state constitution and many statutes to establish that law.